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THE NASA IMPACT ON THE ECONOMIC GROWTH AND
DEVELOPMENT OF THE CAPE KENNEDY REGION - A SUMMARY

by

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THE NASA IMPACT ON THE ECONOMIC GROWTH AND DEVELOPMENT OF THE CAPE KENNEDY REGION -- A SUMMARY

After studying what has happened in a number of individual fields, it is now possible to assess in summary fashion the influence of the NASA program on the economic growth and development of the Cape Kennedy region as a whole in recent years. It is also feasible to summarize how the individual counties have fared in general, and to indicate at least tentatively the spatial limits within which the influence of the NASA program seems to have been most significant.

The Cape Kennedy Region as a Whole

There can be no doubt that the NASA program has had a tremendous impact on the economic growth and development of the Cape Kennedy region as a whole in recent years. The total population of the region increased by 235,100 in the twenty-four years from 1930 to 1954, and then increased by 401,700 in just ten years from 1954 to 1964. The average annual increase in population was about the same for the region as for the state from 1930 to 1954, but it was 10.04 per cent a year for the region from 1954 to 1964 as compared with 6.48 per cent a year for the state. The region's population increased only from 11.24 per cent to 11.56 per cent of the state total between 1930 and 1954. Then in ten years it increased to 14.06 per cent of the state total in 1964. The increase in the region's population which has resulted from the migration of people from other areas and states has been several times as great in recent years as the change which resulted from natural increases in numbers.

Summary

Total retail sales in the region increased somewhat less rapidly than those of the state from 1939 to 1954 and the region's share of the state's total retail sales declined gently. From 1954 to 1963 the retail sales of the region increased at the rate of 15.19 per cent a year, as compared with 9.95 per cent for the state, and the region's share of the state total increased from 11.45 per cent to 14.30 per cent. In terms of dollars, the total annual retail sales of the region increased by \$386,500,000 in the fifteen years from 1939 to 1954 and then by \$628,300,000 in the nine years from 1954 to 1963.

The average annual rate of increase in the number of retail establishments has been 4.46 per cent for the region and 3.23 per cent for the state from 1954 to 1963 after having been slightly smaller in the region than in the state from 1939 to 1954, and the region's share of the state total has increased from 12.67 per cent to 13.76 per cent since 1954. The number of paid employees in retailing has been increasing at a much higher average annual rate in the region than in the state since 1954 (10.81 per cent a year as compared with 6.33), after increasing somewhat less rapidly in the region than in the state from 1939 to 1954. The region's share of the state's total of paid employees in retailing has increased from 11.22 per cent to 14.11 per cent from 1954 to 1963.

The average annual increase in receipts from the selected service trades ran only about five-sixths as great for the region as for the state from 1939 to 1954, but these receipts increased at the rate of 28.73 per cent a year for the region as compared with 14.15 per cent for the state from 1954 to 1963. As a result the region's share of the state total has

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increased from 8.61 per cent in 1954 to 13.58 per cent in 1963. The average annual rate of increase in the number of establishments in the selected service trades was about the same for the region and the state from 1939 to 1954, but it was 9.11 per cent for the region as against 7.73 per cent for the state from 1954 to 1963. The region's share of the state total increased from 12.79 per cent to 13.73 per cent in this nine-year period.

From 1930 to 1950 the number of employed persons increased at an average annual rate of 3.21 per cent in the region as compared with 3.43 per cent in the state as a whole. However, the rate became 12.48 per cent for the region as compared with 7.03 per cent for the state from 1950 to 1960. The region had 11.21 per cent of the state's total employment in 1930, 11.22 per cent in 1940, and only 10.93 per cent in 1950. This proportion then increased significantly to 12.50 per cent in 1960 and about 13 per cent in 1963. The region had 9.50 per cent of the state's wage and salary workers (excluding farm workers, domestic workers, and the self-employed) in 1950. Then the region's share increased to 12.98 per cent in 1960 and 13.69 per cent in 1963.

The total personal income of the region increased at an average annual rate of 13.39 per cent between 1950 and 1954, as compared with 11.48 per cent for the state as a whole. From 1954 to 1963 the rate increased to 22.64 per cent a year for the region and only to 13.84 per cent for the state. The region had 10.24 per cent of the state's total personal income in 1950 and 10.77 per cent in 1954, but its share increased to 14.57 per cent in 1963. The region's personal income per capita was 94.75 per cent of that for the state as a whole in 1950 and 94.95 per cent in 1954, but it increased sharply to 106.77 per cent in 1963. Table 1 shows in summary

Table 1. - The Shares of the Cape Kennedy Region of the State Totals in Connection with Various Economic Activities and Factors in Past Years, and Projections for the Future

Activity or Factor	1940 %	1948 %	1950 %	1954 %	1958 %	1963 %	1965 %	1970 %	1975 %
Population	10.99	---	10.80	11.56	12.98	13.65	14.42	15.37	16.45
Total Retail Sales	11.89*	11.01	---	11.45	12.66	14.30	14.93	16.51	18.09
Retail Establishments	13.54*	11.76	---	12.67	12.85	13.76	14.01	14.61	15.22
Paid Retail Employees	11.56*	10.34	---	11.23	12.27	14.11	14.50	16.36	17.96
Receipts - Selected Service Trades	10.24*	8.39	---	8.61	9.55	13.58	14.47	16.43	18.09
Establishments - Selected Service Trades	12.68*	12.29	---	12.79	12.83	13.73	13.83	14.14	14.39
Total Personal Income	---	---	10.24	10.77	12.81	14.57	15.24	16.90	18.57
Total Employment	11.22	---	12.50	13.00	---	13.00	13.73	14.90	15.77
Wage and Salary Workers	---	---	9.50	---	---	13.69	14.70	16.21	17.35

*1939 Share

Summary

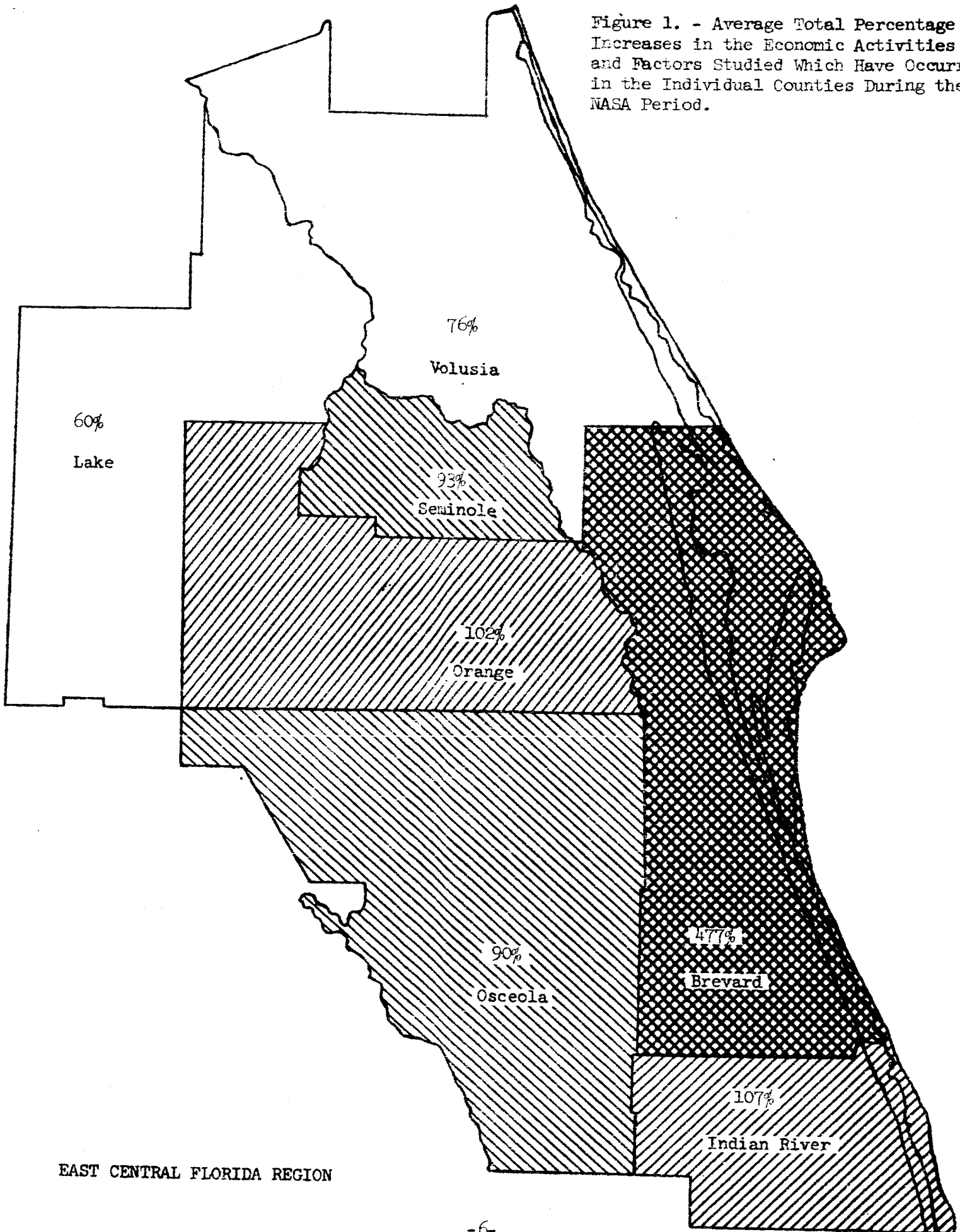
fashion the changes which have occurred in the region's share of the state total in connection with the various economic activities and factors studied and the further changes which have been projected for future years.

On the basis of these developments it is obvious that the Cape Kennedy region has experienced a phenomenal economic growth in recent years and that this growth has been much more rapid since 1954 than in earlier years. It would be inaccurate and misleading to attribute all of this recent growth and development in the region to the NASA program, for other factors and programs stimulating to economic activity have also been in operation. However, it is my opinion that the NASA program should be regarded as mainly responsible for the rapid economic growth which has occurred in the region.

The Individual Counties

In order to evaluate the effect of the NASA program on the individual counties in the region and to determine roughly the spatial limitations of the NASA influence, we shall employ two methods of summarization. In the first place, we have determined for each county the average total percentage increase, in connection with the economic activities and factors studied, which has occurred during the NASA period. The results of this approach are shown in Figure 1. The individual counties seems to have divided themselves into four groups. Brevard County stands alone with an average total increase of 477 per cent. Indian River and Orange Counties, while they fall far short of Brevard County, have nevertheless produced an average total increase of over 100 per cent. Seminole and Osceola Counties fall in the low nineties, while Volusia and Lake bring up the rear with 76 and 60 per cent.

Figure 1. - Average Total Percentage Increases in the Economic Activities and Factors Studied Which Have Occurred in the Individual Counties During the NASA Period.



EAST CENTRAL FLORIDA REGION

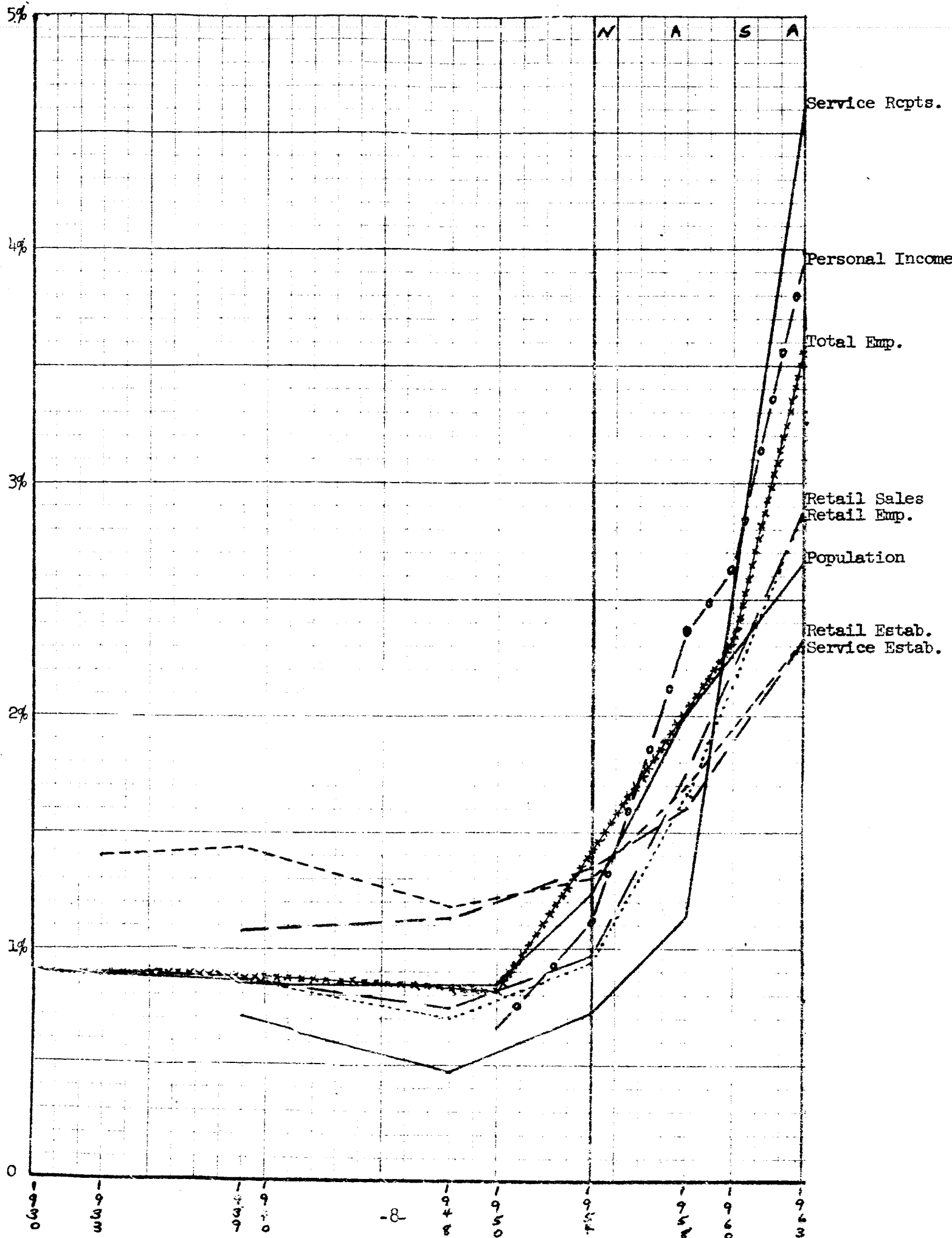
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This method of summarizing is admittedly rough and ready, for it gives equal weight to each of the economic activities and factors studied and they are clearly not of equal importance in the economies of the counties. Moreover, there is an obvious overlap between total employment, wage and salary employment, and paid retail employment. However, when the method is limited to utilizing only total population, total retail sales, total receipts from the selected service trades, total personal income, and total employment, it is found that the counties have arranged themselves in exactly the same groupings, though with different number values, of course.

The second and probably more significant method of summarizing has involved the development of a "profile" for each county. Such a profile indicates in one chart how a particular county has fared in connection with all the matters which we have studied. In order to put such diverse things as population, retail sales, numbers of retail establishments, numbers of paid retail employees, receipts of the selected service trades, numbers of service establishments, total employment, and total personal income all in one chart for a given county, it has been necessary to express the county total for each item or activity as a percentage of the state total for the same item or activity.

Study of these county profiles indicates that the influence of the NASA program has been strongest in Brevard County, with Orange County in second place. Indian River and Seminole Counties have improved mildly in relation to the state as a whole. Volusia and Osceola Counties have mixed records, and Lake County seems to have been least affected. The profile for Brevard County (Figure 2) shows clearly that, while the

5%



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county shares of state totals in most cases had turned upward before 1954, they all skyrocketed between 1954 and 1963. The great impact of the NASA program on the economic growth and development of the county is unmistakable.

The profile for Orange County does not show quite as clear cut a picture as that for Brevard County. The county shares of state totals were all greater in 1963 than in 1954, but those representing population and personal income fell off a bit in the late years of the period. The gains of Orange County during the NASA period were less spectacular than those of Brevard County, but Orange County is clearly in second place in the region in its recent economic growth relative to the state as a whole.

After behaving none too favorably in earlier years, the Indian River County shares of state totals generally turned upward from 1954 to 1963, and this was true of all of the big five (population, retail sales, receipts from the selected service trades, total personal income, and total employment). Seminole County did about as well from 1954 to 1963, except that the county share of total employment in the state declined. It should be noted, however, that the vertical scales in Figures 4 and 5 are laid out in tenths of a per cent for Indian River County and fifths of a per cent for seminole County instead of half-per cents and whole per cents as in the case of Brevard and Orange Counties. This means that changes in Indian River County shares of state totals are in effect magnified ten times by comparison with those of Orange County and by five times relative to those of Brevard County. For Seminole County, the magnification is five times relative to Orange County and two and one-half times relative to Brevard County. Thus the improvements in the level of economic

Figure 3. - Profile of Orange County in Relation to the State of Florida

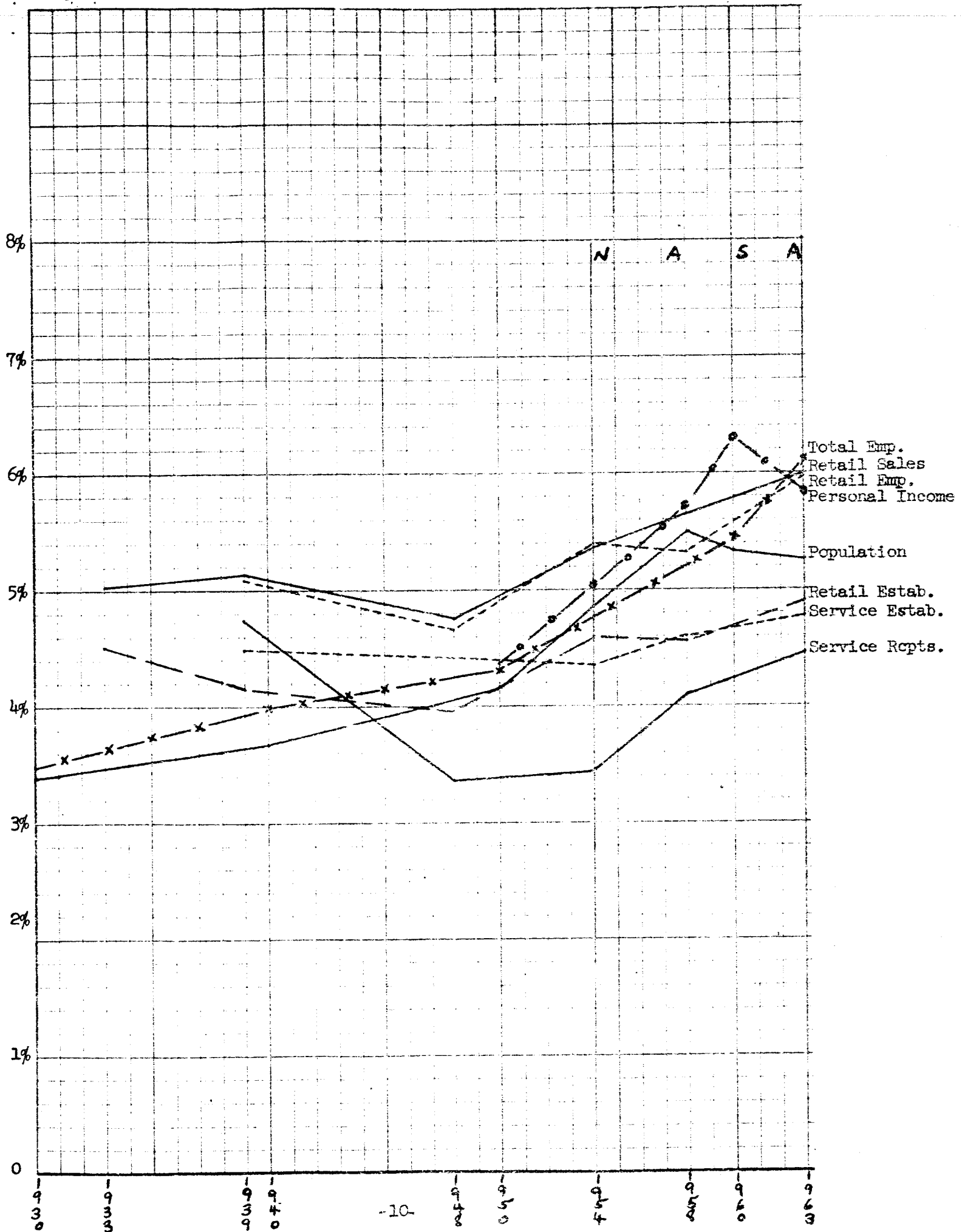


Figure 4. - Profile of Indian River County in Relation to the State of Florida

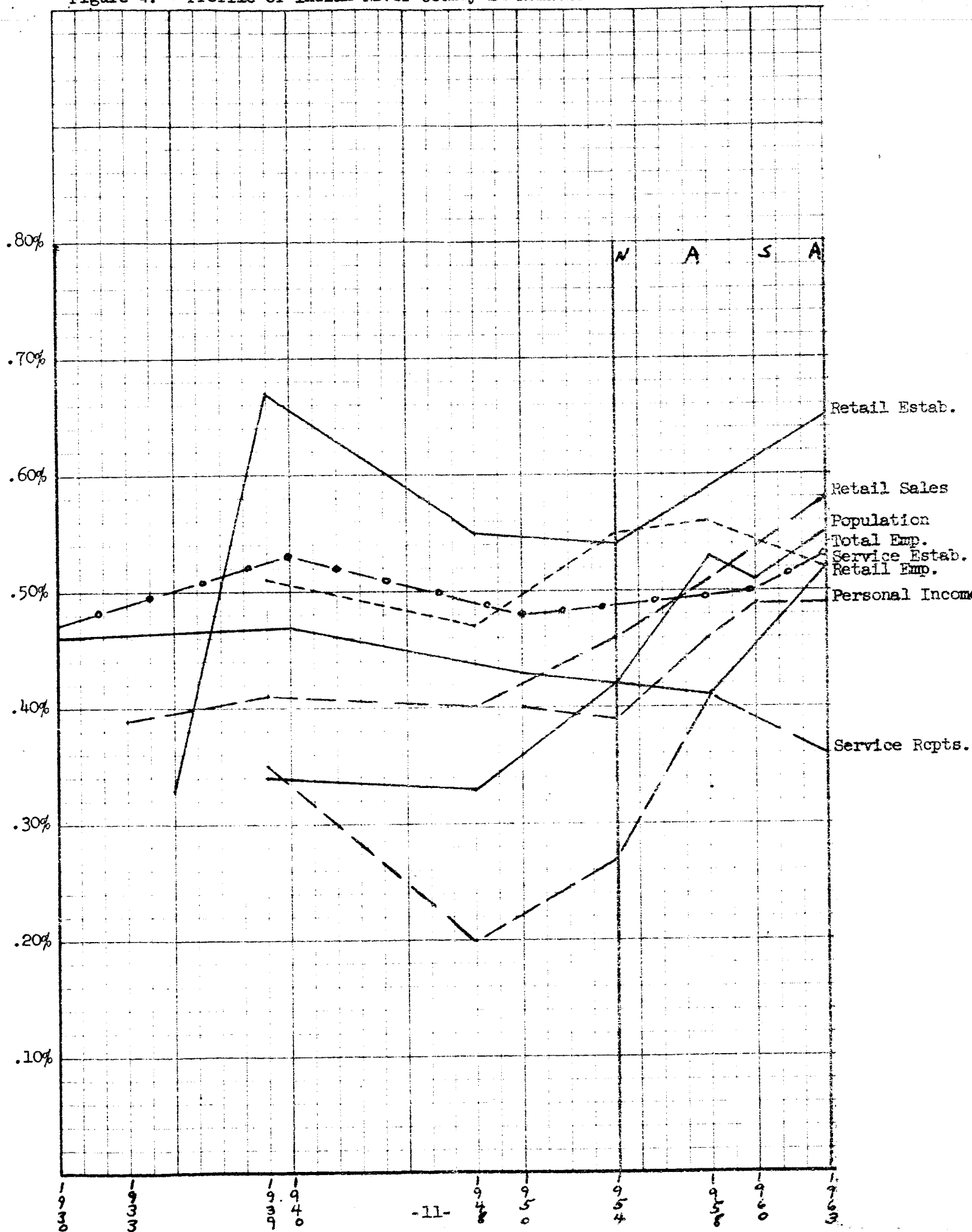
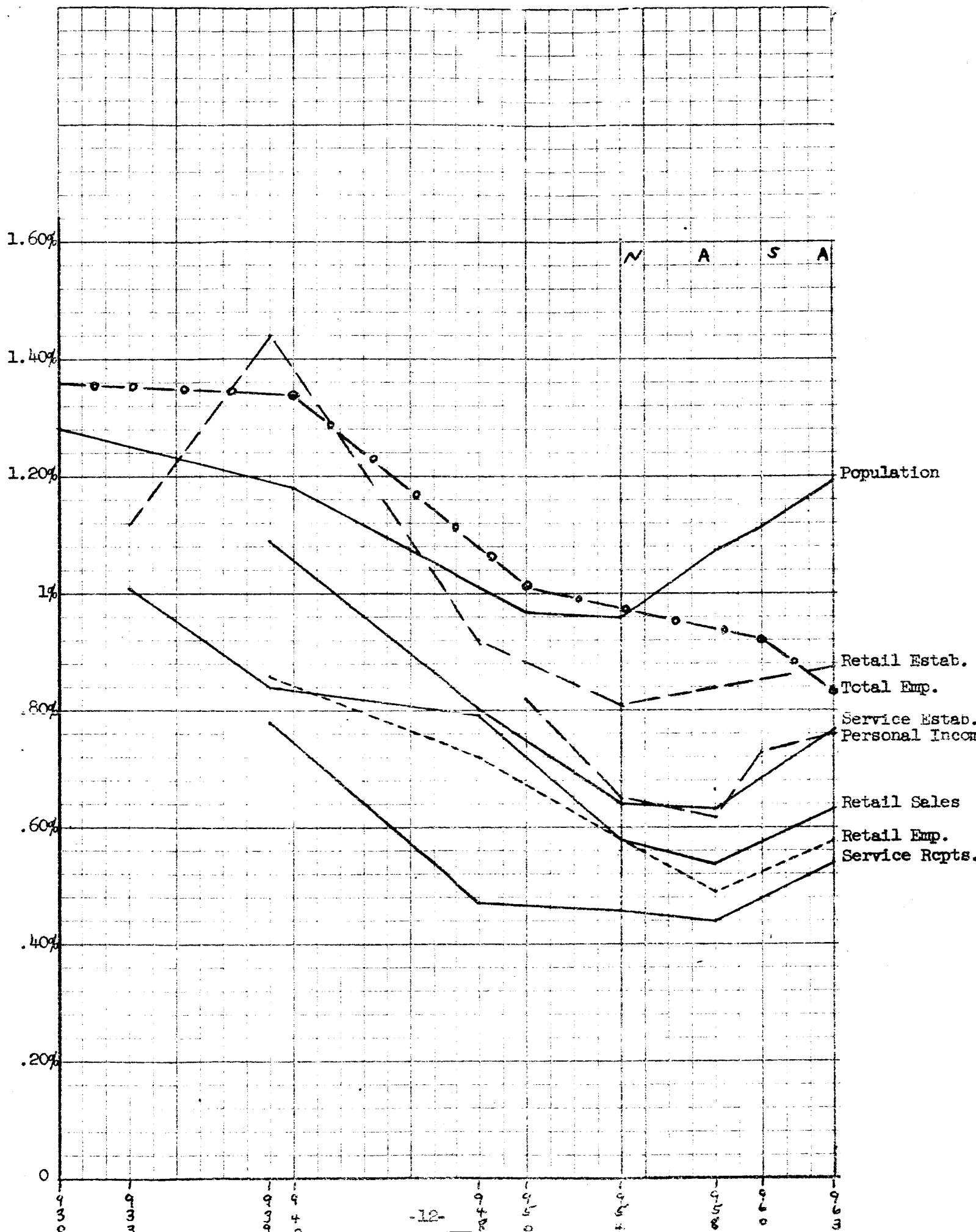


Figure 5. - Profile of Seminole County in Relation to the State of Florida



Summary

activity shown in Figures 4 and 5, while important and gratifying to the counties concerned, have not sufficed to make these counties much more important relative to the state as a whole.

The mixed record of Volusia County in the NASA period stands out in Figure 6. In connection with the major items, Volusia County's share of state totals increased with respect to personal income, retail sales, and population, but declined with respect to total employment and receipts from the selected service trades from 1954 to 1963. The county also had declining shares of the state's retail and service establishments but an increasing share of the state's paid retail employees. The picture is much the same for Osceola County. In 1963 this county had larger shares of the state's service receipts and personal income than in 1954, smaller shares of the state's total retail sales and total employment, and the same share of the state's population. For Osceola County this record from 1954 to 1963 might be considered relatively good after long earlier periods of declining importance relative to the state as a whole, but it still must be argued that the influence of the NASA program became watered down considerably before striking Osceola and Volusia Counties.

In the present context, there is not much to be said for Lake County. The county's shares of state totals were smaller in 1963 than in 1954 for population, retail sales, receipts from the selected service trades, total personal income, and total employment. Service establishments increased in number relative to the state total, retail establishments held level, and retail employees increased somewhat, but on the whole there seems to be no basis for supposing that Lake County has been significantly stimulated

Figure 6. - Profile of Volusia County in Relation to the State of Florida

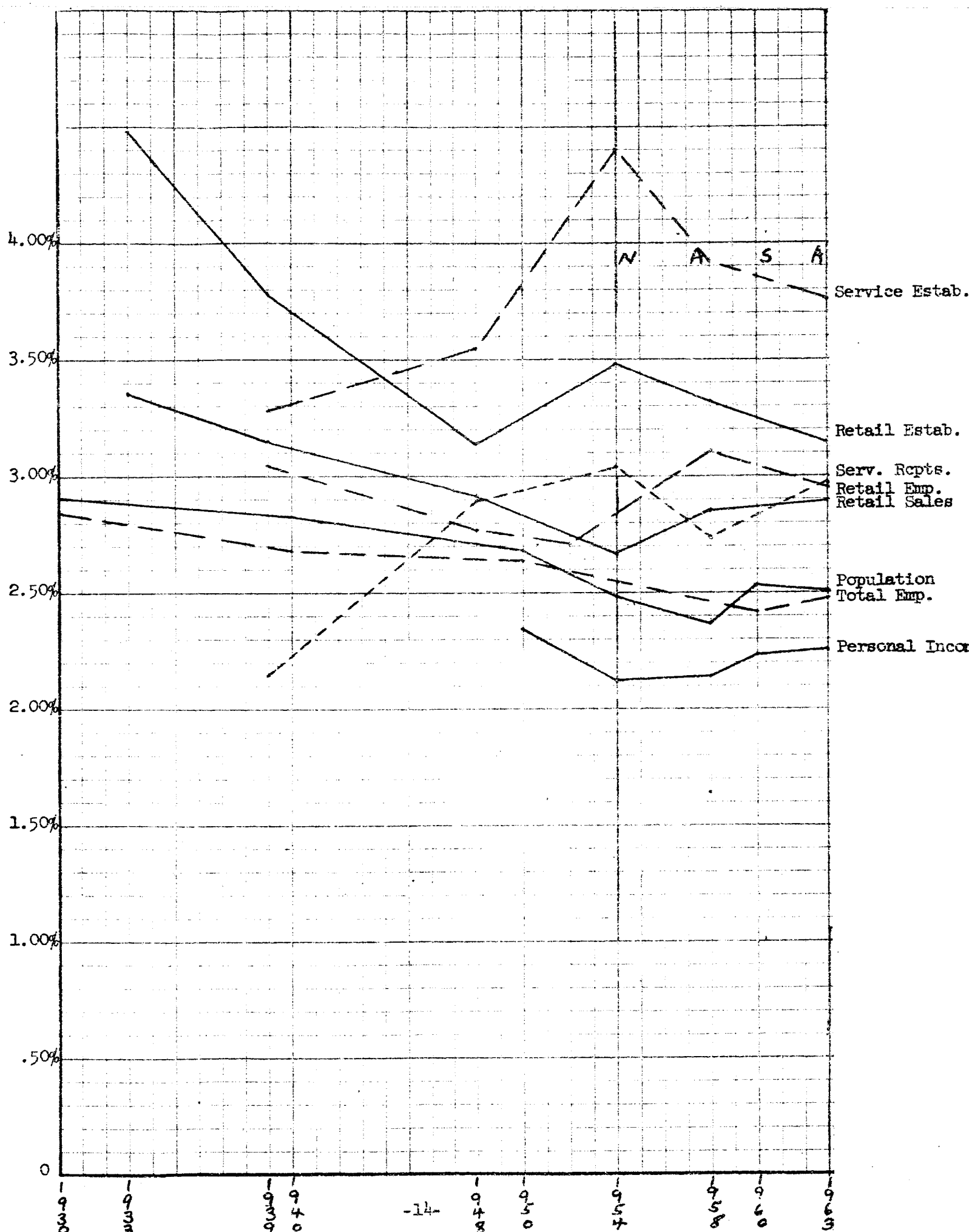


Figure 7. - Profile of Osceola County in Relation to the State of Florida

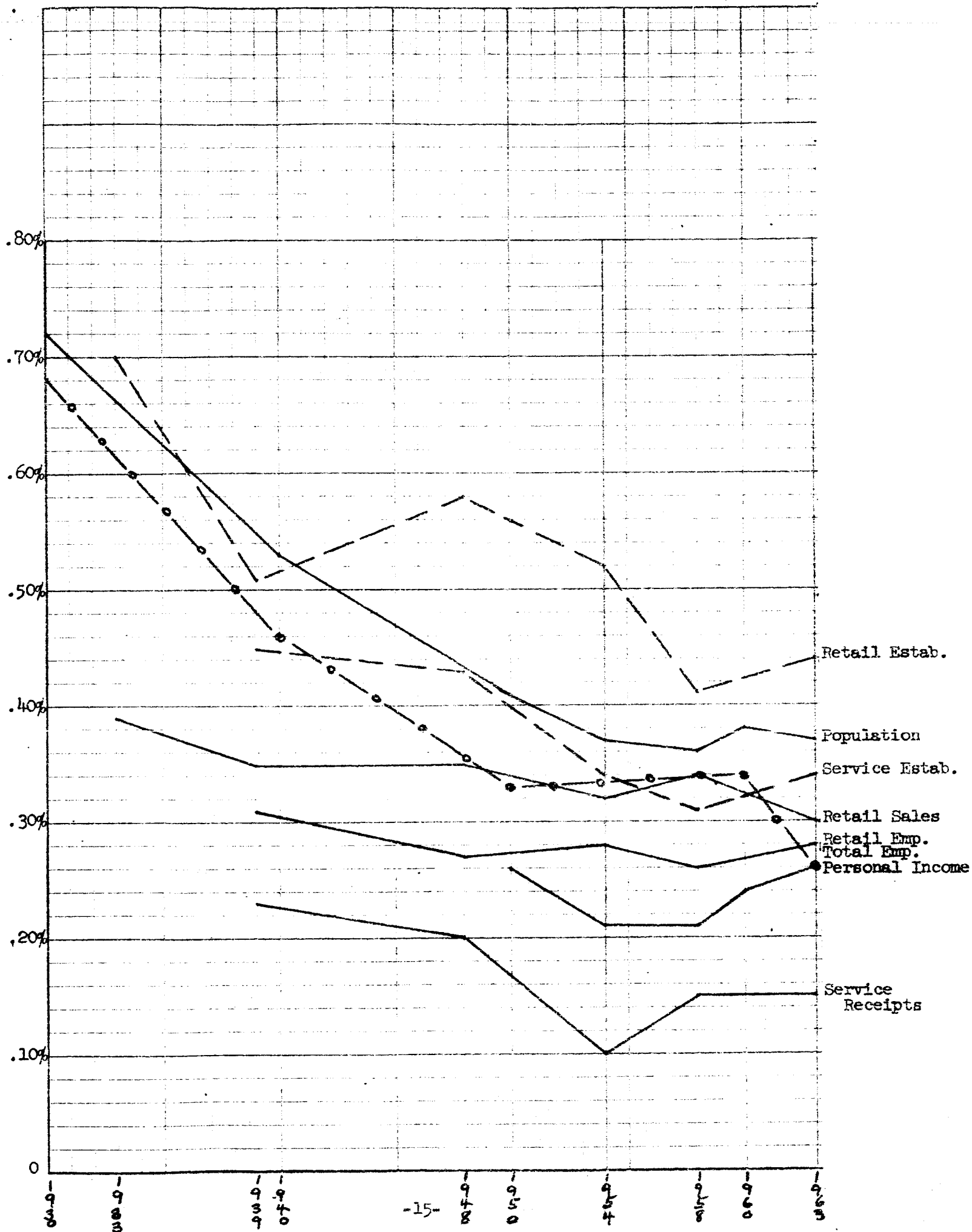
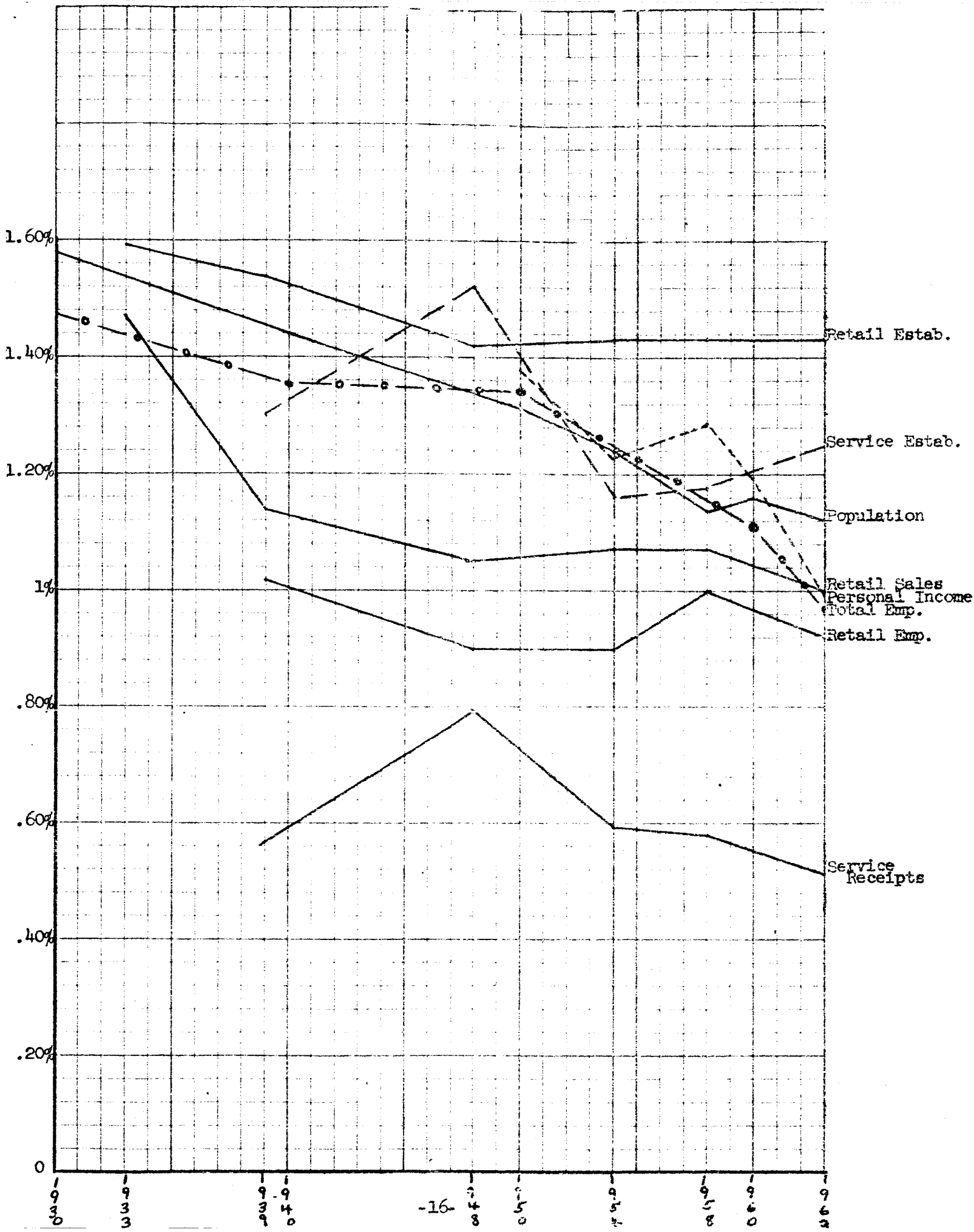


Figure 8. - Profile of Lake County in Relation to the State of Florida



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by the development of the NASA program.

This "profile" method of evaluating the impact of the NASA program on the economies of the individual counties in the Cape Kennedy region has been based on certain obvious assumptions. We have assumed that, if a county has been greatly stimulated by the development of the NASA program, its levels or totals in various phases of economic activity should not only have increased absolutely from 1954 to 1963 but also should have increased relative to those of the State of Florida as a whole. We have assumed that a county has not been greatly stimulated by the NASA development if its levels of economic activity have increased in some cases but decreased in other cases relative to the levels of the state in the period from 1954 to 1963. Finally, we have assumed that the NASA influence did not stimulate a county whose levels of economic activity declined relative to those of the state from 1954 to 1963.

It could be argued, of course, that a county, whose levels of economic activity increased in some cases but declined in others relative to the state as a whole, might have experienced declines in all cases if it had not been for the influence of the NASA program. It could also be argued that a county, which has shown declining totals or levels of economic activity relative to those of the state, might have experienced still greater declines if it had not been for the influence of the NASA program. Such arguments are potentially valid, but the things suggested here are deemed incapable of observation and measurement.

It should also be noted that all counties in the region have experienced absolute increases of various sizes in the levels or totals of

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practically all phases of economic activity during the NASA period. Economic growth and development in a county, even though it occurs at a slower rate than that achieved by the state as a whole, may still be a legitimate cause of great benefit and rejoicing. A county does not have to become an increasing part of the economy of the state as a whole in order for its people to become better off economically. However, we have been discussing the question of which counties appear to have been most affected by the NASA program and not the question of whether the counties have registered economic gains in recent years.

The Projections

Projections to 1965, 1970, and 1975 (and, in the case of population, to 1980) have been made for all the economic items and activities studied. These projections were first made experimentally on the basis of a number of methods which were described in the text of various parts of the report. In all cases, the projections finally presented in the parts of this report were those which in the end seemed most sound on a logical basis. The projections cover individual counties, the Cape Kennedy region, and the State of Florida as a whole.

Although the projections are only projections and not definite predictions, they have been made on the basis of a number of assumptions. We have assumed that:

- (1) The experiences of the past, and especially those of the NASA period to date, furnish the most reliable guide to the future in the absence of strong evidence to the contrary.

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(2) While individual activities may come and go, the NASA program as a whole in the Cape Kennedy region will be well maintained and even expanded somewhat in the years to come.

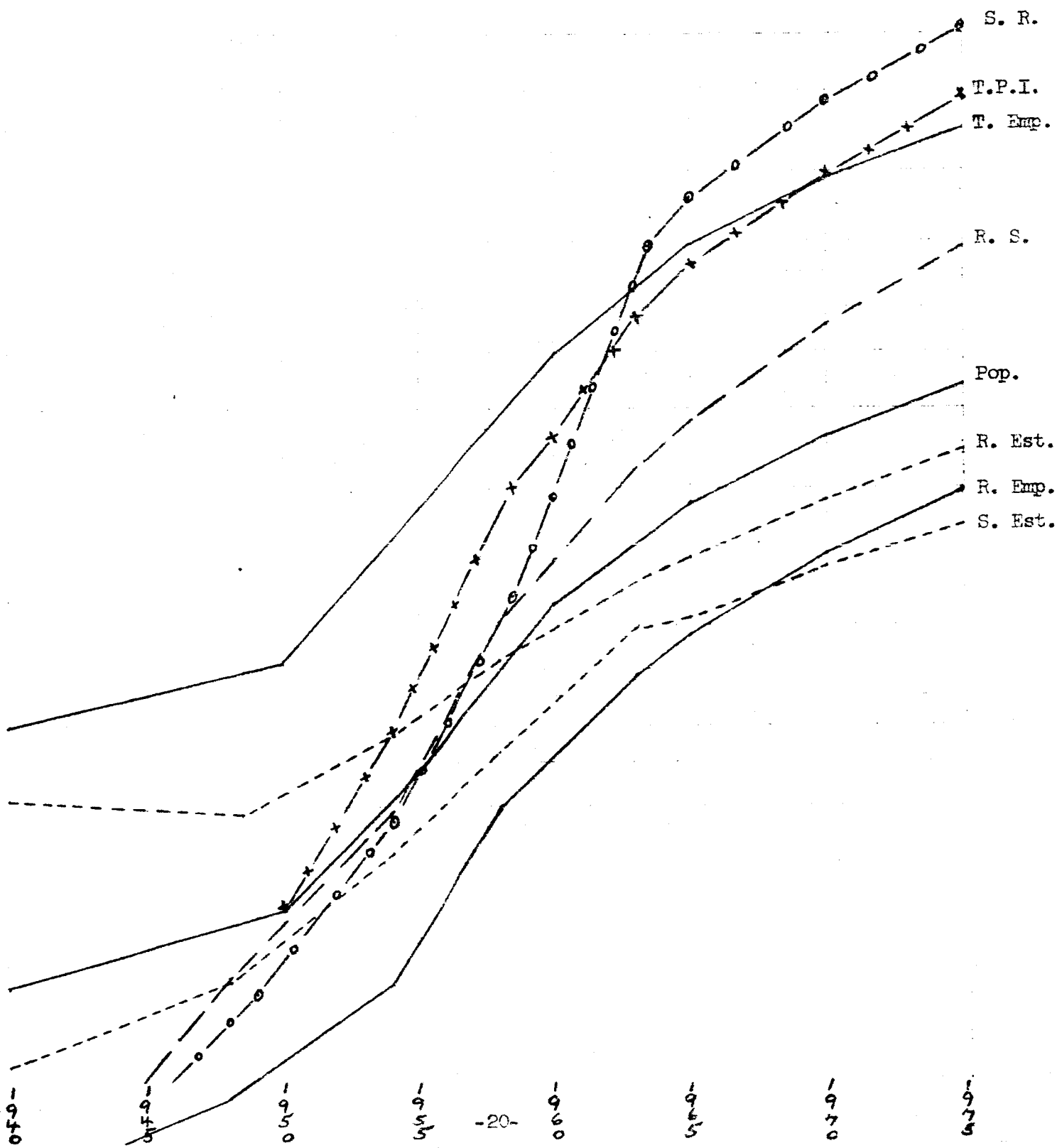
(3) The economy as a whole will experience only short and mild recessions, and not protracted and severe depressions, in the period covered by the projections.

(4) The purchasing power of the dollar will be relatively stable and no more than very mild inflation of prices will occur in the period covered by the projections.

A first impression of some of the projections may be that they indicate truly remarkable future levels of activity in some of the faster growing counties. However, when these projections along with past data are all plotted on ratio or semi-logarithmic paper, it is to be noted that curves result which correspond fairly closely to normal growth curves. That is, they start upward rather slowly, then rise much more rapidly, and finally taper off to significantly slower rates of growth. These tendencies can be seen clearly in the growth curves for Brevard County, which are presented in Figure 9.¹ Table 2 summarizes the projections which have been made for the Cape Kennedy region and the individual counties in our various reports. We believe that these projections are reasonable, whether or not they will tend to be accurate in practice.

¹In order to make such a chart, it is obvious that the units on the vertical scale have to be changed from dollars to numbers of workers, numbers of establishments, and numbers of people, as the occasion requires. Moreover, no significance is to be attached to the relative levels or heights of the various curves. The only important thing is how each curve moves from left to right.

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Summary

Table 2. - Summary of Projections for the Cape Kennedy Region and the Individual Counties in Relation to 1963 Data

The Region				
Item	1963 Data	1965 Projection	1970 Projection	1975 Projection
Population (Medium Projections, Numbers)	755,000	872,500	1,091,000	1,332,500
Retail Trade, Total Sales (Thousands of \$)	1,087,864	1,255,300	1,718,200	2,244,000
Retail Trade, Establishments (Numbers)	7,335	7,840	9,200	10,700
Retail Trade, Paid Employees (Numbers)	37,646	41,890	52,640	63,540
Selected Service Trades, Total Receipts (Thousands of \$)	202,638	247,370	378,690	537,880
Selected Service Trades, Establishments (Numbers)	5,421	5,910	7,180	8,450
Total Personal Income (Thousands of \$)	1,738,566	2,156,400	3,266,400	4,661,300
Per Capita Personal Income (\$)	2,303	2,534	3,126	3,738
Total Employment (Numbers)	251,200	284,800	361,900	439,100
Non-farm Wage and Salary Workers (Numbers)	197,000	228,000	297,200	367,200
Brevard County				
Population (Medium Projections, Numbers)	147,500	185,000	260,000	337,500
Retail Trade, Total Sales (Thousands of \$)	220,837	280,100	458,200	679,100
Retail Trade, Establishments (Numbers)	1,242	1,410	1,880	2,410
Retail Trade, Paid Employees (Numbers)	7,734	9,480	14,300	19,680
Selected Service Trades, Total Receipts (Thousands of \$)	68,599	87,120	141,640	208,130
Selected Service Trades, Establishments (Numbers)	915	1,040	1,360	1,670
Total Personal Income (Thousands of \$)	474,528	611,730	984,250	1,454,450
Per Capita Personal Income (\$)	3,217	3,399	3,937	4,545
Total Employment (Numbers)	56,900	68,800	97,400	124,000
Non-farm Wage and Salary Workers (Numbers)	49,900	60,900	87,100	111,200
Indian River County				
Population (Medium Projections, Numbers)	30,400	34,000	43,000	52,500
Retail Trade, Total Sales (Thousands of \$)	43,838	50,500	69,000	89,900
Retail Trade, Establishments (Numbers)	346	380	460	550
Retail Trade, Paid Employees (Numbers)	1,382	1,530	1,920	2,300
Selected Service Trades, Total Receipts (Thousands of \$)	5,364	6,470	9,750	13,710
Selected Service Trades, Establishments (Numbers)	207	220	260	300
Total Personal Income (Thousands of \$)	58,179	71,850	108,040	153,500
Per Capita Personal Income (\$)	1,914	2,177	2,635	3,133
Total Employment (Numbers)	9,100	10,230	12,450	14,750
Non-farm Wage and Salary Workers (Numbers)	6,300	7,280	9,200	11,100

Continued

Summary

Table 2. (Continued)

Lake County				
Item	1963 Data	1965 Projection	1970 Projection	1975 Projection
Population (Medium Projections, Numbers)	61,700	67,000	77,000	86,500
Retail Trade, Total Sales (Thousands of \$)	75,875	82,400	97,500	110,900
Retail Trade, Establishments (Numbers)	761	790	860	920
Retail Trade, Paid Employees (Numbers)	2,447	2,600	2,930	3,180
Selected Service Trades, Total Receipts (Thousands of \$)	7,640	8,920	12,660	17,140
Selected Service Trades, Establishments (Numbers)	492	540	650	770
Total Personal Income (Thousands of \$)	117,764	139,650	195,560	265,250
Per Capita Personal Income (\$)	1,909	2,182	2,716	3,316
Total Employment (Numbers)	17,400	18,830	21,000	23,300
Non-farm Wage and Salary Workers (Numbers)	10,800	12,130	14,100	16,200
Orange County				
Population (Medium Projections, Numbers)	290,400	330,000	395,000	472,500
Retail Trade, Total Sales (Thousands of \$)	456,395	516,200	675,500	848,800
Retail Trade, Establishments (Numbers)	2,610	2,780	3,240	3,740
Retail Trade, Paid Employees (Numbers)	15,914	17,300	20,620	23,770
Selected Service Trades, Total Receipts (Thousands of \$)	66,529	80,290	120,650	169,460
Selected Service Trades, Establishments (Numbers)	1,885	2,060	2,510	2,970
Total Personal Income (Thousands of \$)	696,835	854,940	1,271,720	1,794,630
Per Capita Personal Income (\$)	2,400	2,631	3,347	4,126
Total Employment (Numbers)	105,900	118,050	145,900	176,300
Non-farm Wage and Salary Workers (Numbers)	85,300	96,750	121,700	149,800
Osceola County				
Population (Medium Projections, Numbers)	20,500	23,000	27,500	32,500
Retail Trade, Total Sales (Thousands of \$)	23,183	25,300	30,200	34,700
Retail Trade, Establishments (Numbers)	234	240	250	260
Retail Trade, Paid Employees (Numbers)	736	780	860	920
Selected Service Trades, Total Receipts (Thousands of \$)	2,172	2,640	3,990	5,640
Selected Service Trades, Establishments (Numbers)	133	140	170	200
Total Personal Income (Thousands of \$)	31,006	38,240	57,400	81,450
Per Capita Personal Income (\$)	1,512	1,738	2,208	2,627
Total Employment (Numbers)	4,300	5,000	5,960	6,940
Non-farm Wage and Salary Workers (Numbers)	2,500	3,060	3,860	4,690

Continued

Summary

Table 2. (Concluded)

Seminole County				
Item	1963 Data	1965 Projection	1970 Projection	1975 Projection
Population (Medium Projections, Numbers)	65,700	72,500	90,500	115,000
Retail Trade, Total Sales (Thousands of \$)	47,640	53,400	68,500	84,500
Retail Trade, Establishments (Numbers)	464	490	570	650
Retail Trade, Paid Employees (Numbers)	1,551	1,660	1,900	2,130
Selected Service Trades, Total Receipts (Thousands of \$)	8,024	9,610	14,270	19,890
Selected Service Trades, Establishments (Numbers)	304	340	420	500
Total Personal Income (Thousands of \$)	90,110	110,570	164,490	232,150
Per Capita Personal Income (\$)	1,372	1,580	1,935	2,211
Total Employment (Numbers)	14,200	15,980	20,200	23,750
Non-farm Wage and Salary Workers (Numbers)	9,000	10,530	13,850	16,700
Volusia County				
Population (Medium Projections, Numbers)	138,800	161,000	198,000	236,000
Retail Trade, Total Sales (Thousands of \$)	220,096	247,400	319,300	396,100
Retail Trade, Establishments (Numbers)	1,678	1,750	1,940	2,170
Retail Trade, Paid Employees (Numbers)	7,882	8,540	10,100	11,560
Selected Service Trades, Total Receipts (Thousands of \$)	44,310	52,320	75,730	103,910
Selected Service Trades, Establishments (Numbers)	1,485	1,570	1,810	2,040
Total Personal Income (Thousands of \$)	270,144	329,420	484,940	679,870
Per Capita Personal Income (\$)	1,946	2,098	2,539	2,995
Total Employment (Numbers)	43,400	47,930	58,950	70,050
Non-farm Wage and Salary Workers (Numbers)	33,200	37,380	47,450	57,550